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IT'S CHEAP AND EASY TO MAKE YOUR MOTOR PORTABLE

R88S

Any machine on the farm, ordinarily turned by hand, can be operated with a small electric motor at little cost. By making a small motor portable it can be used conveniently in more than a dozen ways to bring about savings in time and expense. Let electricity and a small portable motor do the job for you.

It makes your motor more useful.—One motor can be used for many purposes. Motors are scarce today in many areas and one must often do several jobs. Putting your motor to greater service saves more hours of your labor. . . . Allows you to do other work while your motor works for you.

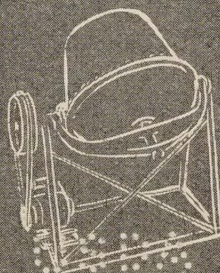
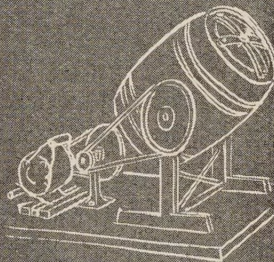
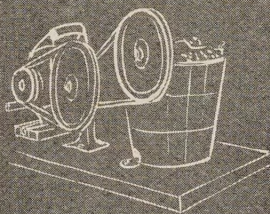
It's easy and cheap to equip.—For 50 cents to a dollar you can make your small motor portable. Only six different items are needed to do this and you can attach them in an hour's time.

It reduces equipment costs.—With a portable motor it is not necessary to buy a separate motor for each machine.

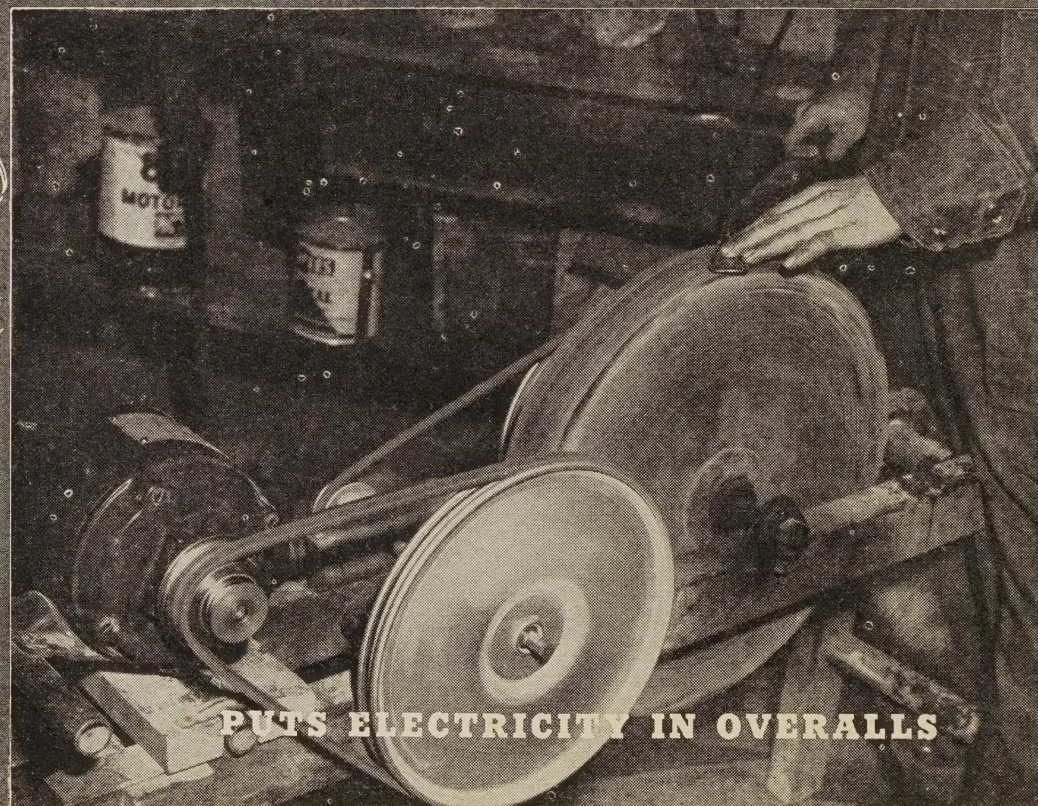
It's inexpensive to operate.—A $\frac{1}{4}$ to $\frac{1}{2}$ horsepower portable motor costs but 1 to 2 cents an hour to operate. For 5 cents such a motor will separate 2,000 pounds of milk, turn a grindstone for 3 hours, shear 75 sheep, grind over 100 pounds of grain, mix 5,000 pounds of feed, or shell 25 bushels of corn, to name a few jobs it will do quickly and cheaply.

It's easy to move and use.—The convenient handle makes it possible to carry the motor from one job to another with one hand. Slip the motor rail into position next to a machine, attach the belt, plug in the extension cord, flip the switch and the machine is ready for use. The weight of the motor keeps the belt tight.

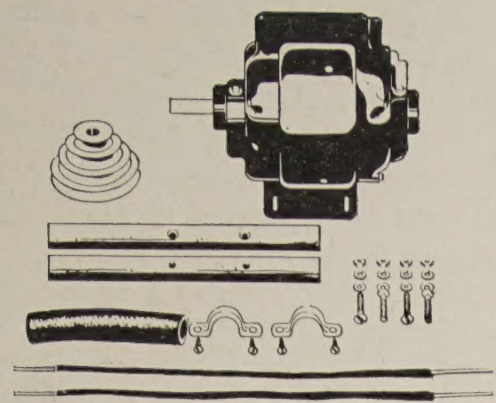
THE SMALL PORTABLE MOTOR



LIB



PUTS ELECTRICITY IN OVERALLS



MATERIALS NEEDED:

Four $\frac{5}{16} \times 2''$ stove bolts.....	
Four plain washers.....	\$0.15
Four lock washers.....	
Five or six inch piece of hose.....	.10
Two 18-inch pieces of insulated No. 10 solid conductor wire.....	.10
Two 12-inch pieces of $\frac{3}{4}''$ galvanized iron pipe.....	.20
Ten $\frac{3}{4}''$ pipe straps.....	
or	
Ten pairs of 12-inch 1"x1" wooden strips.....	.20
Approximate cost.....	\$0.75

ASSEMBLING MATERIAL

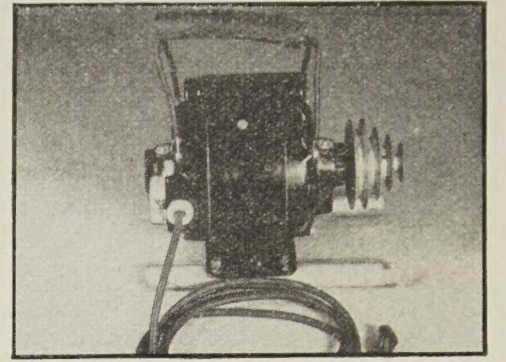
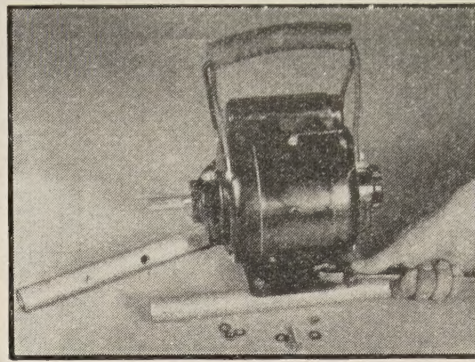
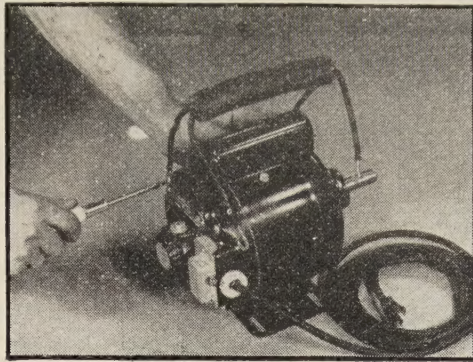
Fastening handle.—Twist the two wires together tightly in the center for a distance of 5 or 6 inches. Then slip the short piece of hose over the twisted part. After baring and flattening the ends of the wires, attach them to the two top frame bolts of the motor.

Bolting rails to motor.—The rails consist of the two pieces of $\frac{3}{4}$ -inch iron pipe bolted to the

base of the motor. Each rail should be long enough to extend from the outer edge of the pulley at one end to the outer side of the motor on the other. They are fastened with stove bolts, the heads of which are countersunk in the pipes. Ream or file the holes to provide for countersinking the bolts. To provide a smooth surface on the bottom of

the pipe rails, grind or file the heads of the bolts after they are in place so they are even with the rounded surface of the pipes.

Completed motor.—At the right below is the completed motor, with handle and rails attached, having at least 10 feet of rubber covered extension cord with hard rubber plug, and a four step V-pulley.

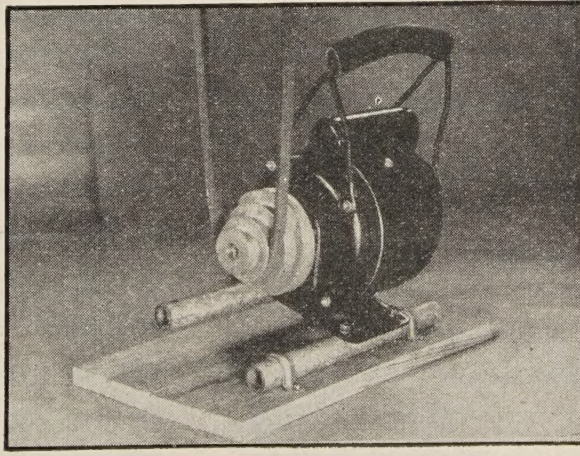
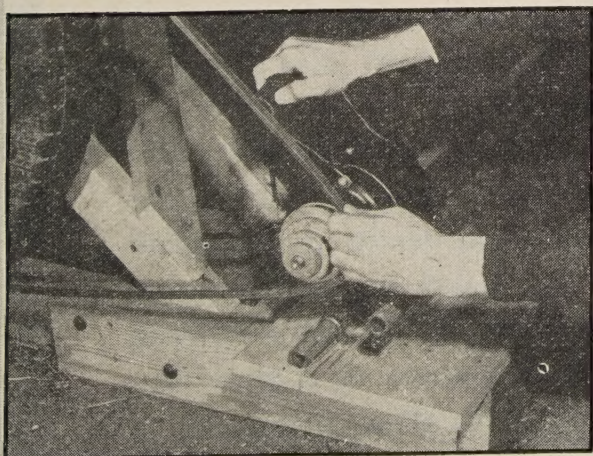


BEFORE USING MOTOR

Selection of pulleys.—The speed of the ordinary small motor is practically constant at 1,750 revolutions per minute; in any event the rated speed is stamped on the nameplate of the motor. Most appliances are designed to operate at definite speeds which are either marked on the appliances or will be furnished by the manufacturers. To operate an appliance at the proper speed, it is necessary to have the right combination of pulleys on both the motor and appliance. The pulley selection chart will be helpful in determining proper pulley sizes when using 1,750 r. p. m. motors.

A four step V-pulley will permit wider latitude in the size of appliance pulleys. Thus it is quite possible to use existing flywheels as pulleys on many hand operated appliances. Because of their added traction power V-belts produce better results than do flat ones. However, V-belts operate satisfactorily on flat pulleys so it is not absolutely necessary to equip all appliances with V-pulleys.

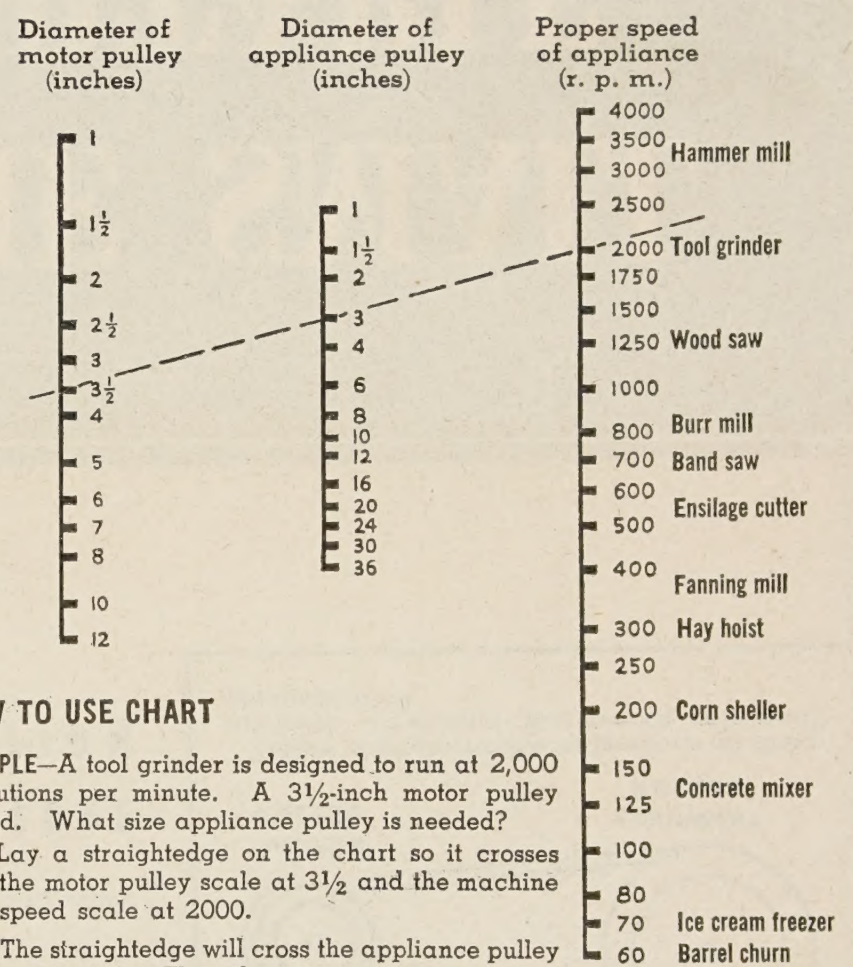
With most slow rotating appliances, especially those previously operated by hand, it will be necessary to use a V-pulley speed reduction assembly. If the assembly is to be used on more than one appliance, it would be helpful to devise a means of quickly attaching and detaching it from the base of each appliance.



Location of motor.—Although an electric motor will operate under very adverse conditions, care in operation will add years to its life. Wherever possible locate the motor in a dry place, free from dripping water, damp air, or dust.

Before deciding upon the various locations of the motor, survey the probable uses of it in order to use as few belts as possible. V-belts cannot be lengthened or shortened.

The lower side of the belt should be on the pulling side of the motor to eliminate the tendency of the motor to climb the belt and topple over. Although not always practical, it is best to have the pulleys of the motor and appliance at about the same level. On some appliances such as a corn sheller or fanning mill it may be necessary



to build a platform on which the motor can be permanently mounted.

Small appliances, such as an ice cream freezer, meat grinder, or emery wheel, can be operated more conveniently if they and the motor are attached to a solid base or the workbench. Many appliances require the use of a speed reduction assembly; this should be provided for when attaching the appliances.

Holding motor in place.—The motor is held in place either with two wooden cleats or by two pipe straps through which one of the pipe rails is inserted. The wooden cleats permit greater ease in inserting or removing the motor and should be spaced so that the pipe rail fits snugly between them. When the pulley of the appliance is higher than the motor pulley, the pipe straps are better to use. If the motor tends to vibrate sideways so that pulleys are out of line, drive a nail at the end of the pipe rail.

After deciding upon the proper location for the motor near an appliance, fasten two wooden cleats or two 3/4-inch pipe straps to the base of the appliance. Before fastening them permanently, however, slip the motor into place and test its position by attaching the belt to the motor and appliance. The motor should be slightly tilted so that its weight keeps the belt tight but so there is not undue strain on either pulley. It may be necessary to enlarge the straps a little so that the pipe rail will slip in and out easily.

HINTS ON OPERATION

Selecting the proper motor.—Two portable motor units—one $\frac{1}{4}$ to $\frac{1}{2}$ horsepower and another 1 to 5 horsepower—will operate nearly all the usual appliances not provided with attached motors. The small motor, described here, can be used on most small appliances while the large one, to be mounted on the motor totter, will operate large equipment such as a wood saw.

A general purpose portable motor should be sufficiently large to handle the largest equipment to be operated by it, even though there is slight loss of efficiency when the motor is used on low loads. This loss is negligible in comparison with the cost of providing an additional motor. For example, it is practical to use a $\frac{1}{2}$ -horsepower motor for short periods of time, on equipment requiring even as little as $\frac{1}{6}$ horsepower.

The following list of small equipment and the size motor needed may be useful in helping you select a small motor to most effectively serve your needs.

Appliance	Size motor (horsepower)
Churn.....	$\frac{1}{4}$
Cream separator.....	$\frac{1}{6}$ to $\frac{1}{4}$
Ice cream freezer.....	$\frac{1}{4}$
Meat grinder.....	$\frac{1}{4}$
Corn sheller (small).....	$\frac{1}{4}$
Fanning mill.....	$\frac{1}{4}$
Feed mixer (small).....	$\frac{1}{3}$ to $\frac{1}{2}$
Fruit or vegetable grader.....	$\frac{1}{4}$ to $\frac{1}{2}$
Green feed cutter.....	$\frac{1}{4}$ to $\frac{1}{2}$
Polisher or cleaner.....	$\frac{1}{4}$
<u>Farm shop tools:</u>	
Band saw or small circular saw.....	$\frac{1}{4}$ to $\frac{1}{2}$
Concrete mixer (small).....	$\frac{1}{4}$ to $\frac{1}{2}$
Drill press.....	$\frac{1}{4}$ to $\frac{1}{2}$
Emery wheel or grindstone.....	$\frac{1}{4}$
Lathe.....	$\frac{1}{4}$

Take care of your motor.—Motors that get proper periodic check-ups live longer and give better service. REA has a free bulletin to help you . . . "Care and Use of Your Electric Motor." Ask your REA Co-op or write to REA, St. Louis, Mo.

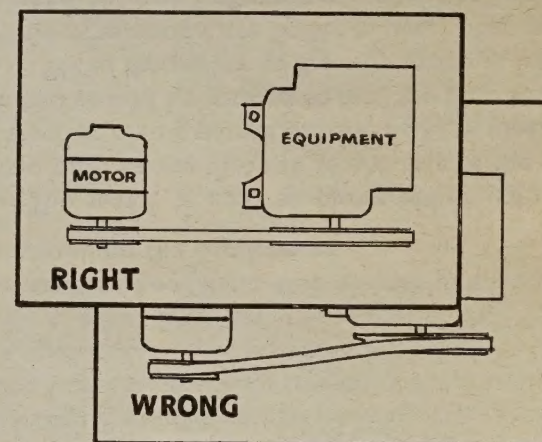
UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL ELECTRIFICATION ADMINISTRATION
ST. LOUIS 2, MISSOURI

BELT HINTS

Power travels best over a properly adjusted belt. Here are some suggestions that will help you get the best service from your belts.

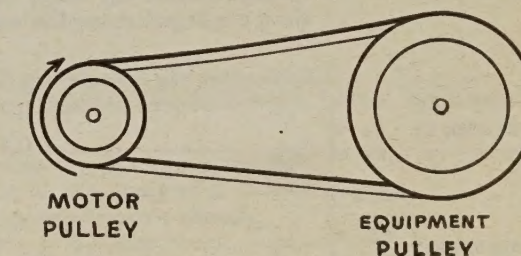
V-belts are usually conceded to be preferable on all sizes of electric motors. If leather belt is used, however, place the belt on the pulleys with the smooth side down. It will hold better.

Make sure the motor and driven equipment are properly aligned. Improper alignment wears your belt and decreases motor efficiency.



Flat (leather) belts operate best in horizontal positions.

Fit flat belts on to the pulleys so that when the pulleys are turning, the tight side of the belt is on the bottom and the top of the belt is slack.



Follow manufacturer's suggestions on dressing belts. In general, they require only small amounts of oil.